**AP Physics B Lab Question – Coefficient of Friction**

You want to experimentally determine the coefficient of static friction between an object and a wooden plank.

1. By checking the line next to each appropriate item in the list below, determine which of the following you would use in your experiment.

\_\_\_\_\_\_\_\_\_\_\_\_\_stopwatch \_\_\_\_\_\_\_\_\_\_\_\_wooden block \_\_\_\_\_\_\_\_\_\_balance \_\_\_\_\_\_\_\_\_\_\_\_spring \_\_\_\_\_\_\_\_\_\_\_\_brick \_\_\_\_\_\_\_\_\_\_protractor \_\_\_\_\_\_\_\_\_\_\_\_ruler \_\_\_\_\_\_\_\_\_\_\_\_meter stick \_\_\_\_\_\_\_\_\_\_compass

1. Draw and label a diagram of your equipment setup for your experiment.
2. Outline the procedures that you would use for your experiment including appropriate measurements.
3. Draw a free body diagram and label all parts.
4. Using equations, show explicitly how you would use your measurements to calculate the coefficient of static friction.

**Scoring rubric**

1. 2 pts must contain protractor and either wooden block or brick
2. 2 pts 1 point for diagram and one labeled.
3. 3 pts for procedures outlined
4. 3 pts 1 point for diagram, 1 point for forces labeled, 1 point for components of vectors shown
5. 5 points total

ff=μs(Fn) 1 point

ma= μs(Fn) larger concept, 2 points

substitution and intermittent steps 1 point

μ=tanθ 1 point